

REMARKS

The Office Action has been received and carefully considered. The Office Action rejects claims 1-4, 7, 13 and 14 as allegedly being obvious under 35 U.S.C. § 103(a) over U.S. Patent No. 6,354,714 to Rhodes ("Rhodes") in view of U.S. Published Patent Application No. 2005/0116667 to Mueller *et al.* ("Mueller"), rejects claims 5 and 6 as allegedly being obvious under 35 U.S.C. § 103(a) over Rhodes in view of Mueller and further in view of U.S. Patent No. 5,099,402 to Starniri ("Starniri"), and rejects claim 12 as allegedly being obvious under 35 U.S.C. § 103(a) over Rhodes in view of Mueller and further in view of G.B. Patent No. 2,313,194 to Allen *et al.* ("Allen"). Claims 8-11 have been objected to as being dependent from a rejected base claim but are found to be otherwise allowable. Applicants respectfully traverse the rejections as follows.

I. Introduction

The present invention, as claimed, provides an illuminating surface that emits light in the presence of an object touching or in close proximity to the surface. The surface is made up of an array of sensors and an array of light sources, each sensor being associated with at least one light source so that, when any of the sensors detects the presence of the object, its associated light source or light sources are illuminated. In addition, *each sensor is not only connected to its own source or sources, but also to an adjacent light source associated with a different adjacent sensor so that the adjacent light source is illuminated even though the sensor associated with that adjacent light source is not activated.* This causes the surface to emit light in an area that *corresponds to the shape* of, but is larger than, the object that is detected. Therefore, illumination from the surface caused by the presence of an objection will still be observable even though the light source or light sources associated with the sensors that detect the object may be blocked by the object itself. Thus, it is possible to ensure that the illumination is always observed even if the object blocks the light from the light sources associated with the sensors that are activated by the object.

II. The Cited References Fail To Disclose Emitting Light In The Shape Of A Detected Object

Claim 1 recites a “surface that ... emits light in the presence of an object ... thereby causing an area of the surface to emit light that corresponds to ... *the shape of the object*.” The cited references, taken alone or in combination, fail to disclose this feature.

The Office Action cites Rhodes, Fig. 1 as allegedly disclosing this feature. To the contrary, Rhodes Fig. 1 depicts an airplane together with three LED lighting *strips*. The LEDs can be switched on by motion sensors, pressure sensors or radio frequency controllers. See Rhodes, column 2, lines 58 to 60. When this occurs, an area of lighting strip is illuminated which can be used, for example, to guide an aircraft to a parking or loading area. See Rhodes, column 3, lines 39 to 50. This is illustrated in Figure 1 where the path that the aircraft should take is shown by the illuminated strips. Thus, at most, Rhodes discloses that motion sensors detect an airplane and activate *strips* of LEDs. Clearly, strips of LEDs as depicted in Rhodes, Fig. 1 are *not in the shape of the detected airplane*. Accordingly, Rhodes thus fails to disclose a “surface that ... emits light in the presence of an object ... thereby causing an area of the surface to emit light that corresponds to ... *the shape of the object*.”

Under 35 U.S.C. § 103, all claim limitations must be taught or suggested in the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). MPEP § 2143 reinforces this principle: “[T]he prior art reference (or references when combined) must teach or suggest all the claim limitations.” Because the cited references fail to disclose a “surface that ... emits light in the presence of an object ... thereby causing an area of the surface to emit light that corresponds to ... *the shape of the object*”, the pending claims are patentable over the citations of record.

III. The Cited References Fail To Disclose Sensors Connected To Multiple Light Sources And Illuminating Light Sources Adjacent To The Detecting Sensor

Claim 1, as amended, recites that “each of the sensors is connected to multiple light sources, such that when a first sensor detects the presence of an object, the first sensor causes the at least one light source associated with it to be illuminated *and also causes at least one adjacent second light source associated with a second different sensor to be illuminated even if the second sensor has not detected the presence of the object*.” Claim 4 recites that “when the sensor of one

circuit detects the presence of the object touching or adjacent to the surface of the one circuit, at least one adjacent circuit causes its light source to be illuminated *even if the sensor associated with said at least one adjacent circuit has not detected the presence of the object.*" The cited references, alone or in combination, fail to disclose or suggest these features.

Basis for these amendments can be found in the passage on page 7, lines 5 to 23. Here, it is clear that the switches 12 act as sensors and are closed by the application of a light pressure on them (page 7, lines 8 and 9). When a person steps on the panel, the top layers depress the switches immediately under the person's foot, thereby closing switches 12 and illuminating the LEDs of the associated circuits (page 7, lines 10 to 12). After an interval, the area of the panel that is illuminated by LEDs spreads to adjacent circuits 10 in the manner described above (page 7, lines 12 to 14); these LEDs are in the area that is not under the persons foot and therefore *the LEDs of the adjacent circuits are illuminated even though the switch 12 of the adjacent circuit is not depressed.*

Thus referring to Figure 2 of the drawings on this application, each sensor 12 is associated with a light source 20 that is illuminated when the sensor detects the presence of an object – for example, in Figure 2, when the sensor of circuit K detects the presence of an object, the light source of circuit K is illuminated. *In addition*, the light source of *adjacent circuits* G, O and L are also illuminated because of the leak paths to those circuits through the resistors 30, even if the sensors of circuits G, O and L are not triggered. This means that the area illuminated is the same shape as, but *larger* than the shape of the object detected.

Rhodes, however, fails to disclose that each sensor, in addition to being connected to its associated light source, is also connected with at least one adjacent light source that is associated with a different sensor such that the adjacent light source is illuminated even if the sensor associated with it has not detected the presence of any object. In Rhodes, there is no teaching that each sensor (a) is associated with at least one light source and (b) is additionally connected with at least one adjacent light source that is associated with a different sensor such that the adjacent light source is also illuminated even if its associated sensor has not detected the presence of the object.

This deficiency is not made up in Mueller, which discloses that each tile has its own sensor and its own light sources such that the tiles can be illuminated individually based on the presence of an object (in this case a person). There is no teaching in Mueller that, when the sensor of a first tile detects the presence of an object, the light sources of a second, adjacent tile are also illuminated. To take Figure 61 of Mueller as an example, the light sources on tile 500 in the top left hand corner of the array are associated with the sensor 6102 such that when sensor 6102 detects the presence of the person's hand, the light sources of the tile are illuminated. In accordance with the present claims, the activation of the sensor 6102 of the top left hand tile would also illuminate one or more adjacent tile in the array even if the sensor 6102 associated with that adjacent tile is not activated by the person 6104. Such teaching is not disclosed in Mueller.

In summary, the present invention as claimed shares light sources between sensors so that the triggering of one sensor not only illuminates its immediately associated light source(s) but also illuminates light sources that are associated with other sensors, ***even if the other sensors are not triggered***, thereby allowing the illuminated area to be the same shape as, but larger than the object detected, which is not something that either Rhodes or Mueller achieve.

Under 35 U.S.C. § 103, all claim limitations must be taught or suggested in the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). MPEP § 2143 reinforces this principle: "[T]he prior art reference (or references when combined) must teach or suggest all the claim limitations." Because the cited references fail to disclose that "each of the sensors is connected to multiple light sources, such that when a first sensor detects the presence of an object, the first sensor causes the at least one light source associated with it to be illuminated and also causes at least one adjacent second light source associated with a second different sensor to be illuminated even if the second sensor has not detected the presence of the object" as recited in claim 1 and fail to disclose that "when the sensor of one circuit detects the presence of the object touching or adjacent to the surface of the one circuit, at least one adjacent circuit causes its light source to be illuminated even if the sensor associated with said at least one adjacent circuit has not detected the presence of the object" as recited in claim 4, the pending claims are patentable over the citations of record.

IV. The Cited References Fail To Disclose An Array Of Sensors

Claim 1 recites “an array of sensors [and] an array of light sources, each sensor being associated with and proximal to at least one light source.” The cited references fail to disclose this feature.

The Office Action cites to Rhodes, column 3, lines 41-50 as allegedly disclosing this feature. To the contrary, the cited passage at most discloses a “series”, that is, a *line* of sensors. In sharp contrast, the present invention as claimed is directed to a two-dimensional *array* of sensors. Rhodes has no need for an array of sensors as it need only detect the presence of an aircraft, and a line of sensors would suffice. Accordingly, Rhodes neither discloses nor suggests an array of sensors.

Furthermore, none of the cited references disclose an array of sensors, each *associated with* and *proximal to* a light source. Thus, the claims as amended recite an array of sensors, where each sensor is near a light source. By way of non-limiting example, this can be thought of as a grid, where each point on the grid contains both a sensor *and* an associated light source. None of the cited references suggest or disclose this feature.

Under 35 U.S.C. § 103, all claim limitations must be taught or suggested in the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). MPEP § 2143 reinforces this principle: “[T]he prior art reference (or references when combined) must teach or suggest all the claim limitations.” Because the cited references fail to disclose a “an array of sensors [and] an array of light sources, each sensor being associated with and proximal to at least one light source,” the pending claims are patentable over the citations of record.

V. The Cited Art Fails TO Disclose That Each Circuit Has Its Own Power Supply

Claim 3 recites that “each circuit has its own power supply.” The “circuit” referred to in claim 3 finds antecedent basis in claim 1 as “a circuit for controlling the illumination of each light source.” The cited references fail to disclose this feature.

At most, Rhodes discloses that that “an embeddable LED light 100 ... is powered by a 5 volt power supply.” This is entirely different from the claimed power supply for each “circuit for controlling the illumination” as claimed. As can be seen in Rhodes, Figure 3, each strip is connected via a connector 150. Thus, Rhodes implies that the lighting strip is powered by a

single power supply. In addition, Figures 2 and 3 of Mueller disclose the exact opposite of what is claimed since both figures show a controller 202, 302 which controls the LED centrally.

Under 35 U.S.C. § 103, all claim limitations must be taught or suggested in the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). MPEP § 2143 reinforces this principle: “[T]he prior art reference (or references when combined) must teach or suggest all the claim limitations.” Because the cited references fail to disclose that “each circuit has its own power supply,” where the “circuit” is “for controlling the illumination of each light source,” the pending claims are patentable over the citations of record.

VI. The Rejections Over Rhodes In View Of Mueller And Further In View Of Starniri Are Improper

Claim 5 recites that “the light source of the said at least one adjacent circuit is illuminated after a delay following the illumination of the light source of the said detecting circuit, thereby giving the effect that the area of the surface that emits light in the presence of the object spreads.” Claim 6 recites that “the light source of the said at least one adjacent circuit ceases to be illuminated prior to the light source of the said detecting circuit, thereby giving the effect that the area of the surface that emits light shrinks when the object is no longer touching or adjacent to the surface.” The cited references fail to disclose these features.

In rejecting claims 5 and 6, the Office Action relies on Starniri, which discloses a system for lighting a hand rail which includes a number of sensors that, when the sensors detects the presence of a person, the system illuminates a series of light sources along the length of a handrail. In this way each sensor is associated with all the light sources, which are all switched on *simultaneously*. See Starniri, column 5, line 60 to column 6, line 6. All the light sources are also switched off *simultaneously* after a time delay following the sensor ceasing to detect the person; the length of the delay can be adjusted. See Starniri, column 5, line 67 to column 6, line 6).

Claim 5 requires that, when a sensor in a circuit detects the presence of an object, the light sources of the same circuit are illuminated and the light sources of the adjacent circuits are

subsequently illuminated after a delay. Since Starniri only disclosed the light sources being switched on simultaneously, Starniri does not disclose the feature of claim 5. In this connection, the “delay” referred to in the passage at column 5, lines 66 to column 6, line 17 refers to the switching off of the light sources, whereas claim 5 is concerned with the switching on of the light sources.

Claim 6 requires that the light source of the “adjacent” circuit ceases to be illuminated prior to the light source of the detecting circuit, which therefore requires that the light sources are turned off at different intervals. In contrast, all the lamps in Starniri are turned off simultaneously, albeit after a delay following removal of an anatomical contact between the person and the rail. Accordingly, Starniri does not disclose the feature of claim 6.

Under 35 U.S.C. § 103, all claim limitations must be taught or suggested in the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). MPEP § 2143 reinforces this principle: “[T]he prior art reference (or references when combined) must teach or suggest all the claim limitations.” Because the cited references fail to disclose the limitations of claims 5 and 6, such claims are patentable over the citations of record.

CONCLUSION

The present response is submitted together with request for continued examination and a petition for a two-month extension of time. In the event that a variant exists between the amount tendered and that determined by the U.S. Patent and Trademark Office to enter this reply or to maintain the present application pending, please charge or credit such variance to the undersigned's Deposit Account No. 50-0206.

Applicants respectfully submit that this application is in condition for allowance and such disposition is earnestly solicited. If the Examiner believes that a telephone conference or interview would advance prosecution of this application in any manner, the undersigned stands ready to conduct such a conference at the convenience of the Examiner.

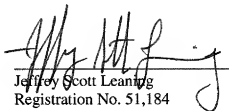
Respectfully submitted,

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